DEQ SITE ASSESSMENT PROGRAM - STRATEGY RECOMMENDATION

Site Name: Lakeside Industries

Site CERCLIS Number: (none)

DEQ ECSI Number: 2372

Site Address: 4850 NW Front Ave., Portland, OR

Recommendation By: Mark Pugh, Voluntary Cleanup and Site Assessment Section, DEQ Northwest Region

Approved By: Michael E. Rosen, Portland Harhor Manager, DEQ Northwest Region

FOR HER

Date: November 23, 1999

NOTE: This site (Figures 1 and 2) is within a 6-mile stretch of the Lower Willamette River in which the U.S. Environmental Protection Agency (EPA) conducted a sediment study in 1997. This area, referred to as the Portland Harbor, is between the upstream ends of Sauvie Island (River Mile 3.5) and Swan Island (RM 9.5). The purpose of this Strategy Recommendation is to determine whether a specific hazardous substance release or a specific past operation at the site can be linked to contamination documented by EPA in sediments adjacent to the site. Because of this focus, the Strategy Recommendation may omit some historical site information, regulatory issues, or further-action conclusions that might otherwise be included in a DEQ Strategy Recommendation.

Background, Portland Harbor Sediment Evaluation

In September and October 1997, EPA's contractor, Roy F. Weston, Inc., collected 187 near-shore sediment samples within the Portland Harbor area defined above. Most samples (150) were collected as shallow grab samples within the upper 6 to 17 centimeters (cm) of sediments. 37 deeper composite core samples, from depths of between 55 and 139 cm, were also collected. All samples were analyzed for total metals, semi-volatile organic compounds (SVOCs), total organic carbon (TOC), and sediment grain size. Selected samples were also variously analyzed for organotins (TBTs), pesticides, polychlorinated biphenyls (PCBs), chlorinated herbicides, and polychlorinated dioxins and dibenzofurans.

Based on analytical results from this study, which showed extensive sediment contamination, EPA is currently considering Portland Harbor for inclusion on the federal National Priority List (NPL - also known as Superfund).

Between late 1998 and mid-1999, DEQ examined EPA's analytical data to determine potential sources for sediment contamination in the Harbor. Potential sources associated with the most contaminated areas of sediment were sites already active in DEQ's Cleanup Programs.

DEQ categorized other areas of sediment contamination (i.e., those areas not thought to be associated with active Cleanup Program sites) by defining the areas:

- having the highest detected concentration of a given contaminant;
- with contaminant concentrations in the upper five percent of a given contaminant's detected concentrations; and
- having contaminant concentrations above an apparent "baseline range" most commonly detected throughout the harbor area.

DEQ categorized in this manner because there are no established freshwater sediment contaminant concentration guidelines or well-defined background contaminant concentrations for the harbor area. The contaminant "baseline range" was developed by examining the geometric distribution of concentrations for each contaminant detected. Any sediment concentrations that appeared to depart significantly from the ranges most commonly detected were suspected of lying near a potential contaminant source.

Two EPA sampling stations are located in the immediate vicinity of the site (SD135, SD137; Figure 2). SD135 is located near the northwestern (downstream) corner of the site. SD137 is located in the northeast central portion of the site. One surface sediment sample was collected from the upper 15 centimeters (cm) of sediment at SD135. In addition, a deeper subsurface core sample was collected from the upper 85 cm of sediment. The core sample was thoroughly mixed to form a representative sample (SD135A). At SD137 a surface sediment sample was collected from the upper 13 cm. Surface sediment sample stations also were located approximately 0.1 miles downstream (SD131), and approximately 0.8 miles upstream of the site (SD140).

Table 1 lists laboratory analytical results for the EPA samples compared to Portland Harbor baseline concentrations.

Concentrations for a variety of inorganic compounds reported for subsurface sample SD135A, including barium, cadmium, lead, mercury, silver, and zinc, exceed their respective baseline concentrations. The reported mercury concentration was twice the baseline concentration; other exceedences are less than two times the reference concentration for the respective inorganic compounds. The semi-volatile organic compound (SVOC) benzoic acid also exceeded the baseline concentration in the subsurface core sample. Baseline concentrations were not exceeded in the surface sediment sample collected at SD135.

Exceedences of baseline concentrations at sample station SD137 are limited to antimony.

Antimony and zinc both exceeded their respective baseline concentrations at the downstream sample station SD131.

None of the metals concentrations in the upstream sample exceeded baseline concentrations, suggesting a possible metals source area in the vicinity of the site. The SVOC 4-methylphenol was the only compound that exceeded baseline concentrations in the upstream sample.

Operational History

Lakeside Industries has been the owner/operator of a hot-mix asphaltic concrete manufacturing plant at the site since 1988. The current owners indicate the site was used as a steelyard prior to 1988. Lakeside Industries also provides road construction services. The site totals 18.42 acres, consisting of 9.73 acres of uplands above river level, and 8.69 acres of lowlands comprising the Lakeside Industries dock area (Figure 2).

The current plant consists of an asphalt plant and concrete treated base (CTB) plant crusher and an asphalt recycling and reclamation plant (Figure 4). Crushed material is used as aggregate in the asphaltic/concrete wet mix. Approximately 20 percent of the asphalt component is obtained from recycled asphalt product (RAP) which includes used asphalt and asphaltic shingles, but may include other asphaltic base materials. The asphalt recycling plant consists of a burner, dryer, scrubbers, and a baghouse. Waste asphalt material is off-loaded dockside and stockpiled adjacent to the Willamette River. As discussed below, the hot melt and crushing process are each conducted under DEQ Air Quality (AQ) Division permits (see Air Contaminant Discharge Permit 26-3242; 26-3229).

Other site features include three monitoring wells, a two dry well, one 2,500-gallon waste oil tank, and one 15,000-gallon above-ground diesel storage tank within containment. Two City storm water outfalls (19, 19a) are located just west of the site. These

outfalls discharge near SD135 and may have contributed to elevated contaminant concentrations observed at this location. The relationship between the on site drywells and the City outfalls is not known.

Aerial photos from 1983 and 1977 appear to show materials, possibly steel products, staged at the site. The 1963 and 1957 aerial photos show what appears to be lumber staged at the site.

Investigation History

Subsurface environmental investigation at the site is limited to installation and sampling of three monitoring wells (MW-43, MW-44, MW-46) by Gunderson Inc. The Gunderson property is located immediately adjacent to the east of Lakeside Industries.

The wells were installed to determine the downgradient extent of the volatile organic compound (VOC) groundwater plume originating from the Gunderson site. Sampling results indicate low levels (<5 ppb) of chlorinated VOCs were detected in wells MW-43, MW-44, and MW-46, which is consistent with known chemical sources on the Gunderson property.

Other historical environmental sampling data is limited to air sampling conducted as required by the air discharge permits, as discussed below.

Nearby Sediment Sampling

Shaver Transportation, located adjacent to the site, conducted sediment sampling to characterize sediment prior to proposed dredging. Samples were collected from seven locations adjacent to the Shaver Transportation docks in June 1998 (Figure 3). The depth of the sediment samples is not known. The seven samples were mixed to form a composite sample, and analyzed for total metals, PAHs, PCBs, and organochlorine pesticides. Analytical results compared to baseline levels are shown in Table 2. Five metals (cadmium, copper, lead, mercury and zinc) were detected at concentrations above baseline concentrations, and above concentrations detected at SD135. These data suggest that there is a contaminant source in the immediate vicinity of Shaver Transportation. Another potential source is City outfall 19 and/or 19a. (Shaver Transportation is the subject of a separate DEQ Strategy Recommendation).

Regulatory History

Regulatory information in this section is based on a review of the following DEQ resources, including:

- DEQ Environmental Cleanup Site Information (ECSI) database
- DEQ Hazardous Waste Information Management System database(HWIMSy)
- DEQ Spill Information Network (SPIN) database
- DEQ Complaint files
- DEQ Water Quality Division (WQ) files
- DEQ Air Quality Division (AQ) files
- DEQ Leaking Underground Storage Tank (LUST) files

Lakeside Industries operates under two DEQ Air Quality (AQ) discharge permits. One permit (26-3242) covers emissions from the asphalt burner, and stipulates production limits and annual permissible levels of carbon monoxide (CO), total suspended particulates (TSP), nitrogen oxides (No_x), and volatile organic compounds (VOCs). The other permit (26-3229) sets opacity and particulate limits for emissions from crushing activities. From 1990 to 1992, a series five Notices of Noncompliance (NON), one civil penalty, and stipulated order were issued by DEQ to Lakeside Industries. The existing permit calls for a process change tb reduce emissions and comply with the stipulated order. Since 1992, DEQ inspections have found the facility to be in compliance.

From 1889 to 1995 the site was identified as the source for six complaints pertaining to air emissions. Complaints include dust from a rock crusher, asphalt droplets precipitating from smoke, and a 200-foot dust plume. Fugutive emissions over time may have released PAHs from the site, which are constituents of asphalt. Airborne PAH-bearing particulates may have settled out into the Willamette. However PAH concentrations in the sediment sample collected near the site were not elevated above baseline levels, suggesting this mechanism did not contribute appreciably to sediment contamination.

Lakeside Industries registered as a Small Quantity Generator (SQG) of hazardous waste in 1989. Their primary waste stream consisted on spent petroleum naphtha solvent that was contained in a parts washer used for construction machinery maintenance. The waste was identified as D001 ignitable characteristic waste and F001 listed waste which includes spent chlorinated solvents used in degreasing. In 1993 2123 pounds of spent solvent and 581 pounds of ethylene glycol was transported off site. In 1996 they changed status to a conditionally exempt generator (CEG).

In 1988 Lakeside Industries reported a release from a diesel tank to the DEQ UST section, and the site was leaking UST (LUST) #26-88-0075. The site was closed in 1989. The file has been archived and was not available for review. The UST does not appear to be an environmental concern at the site.

There is a letter in the HW file indicating that Lakeside Industries inquired about using spent abrasive blast media (ABM) in place of fine aggregate in asphalt. ABM is of conceru, as it may be associated with contaminants contained in paints, such as metals (including tributyl-tin). DEQ indicated at that time they did not provide approval for recycling programs. DEQ further stated that this practice is acceptable provided the ABM is not hazardous waste/material, and that documentation to that effect should be maintained for three years after the waste stream is no longer generated. It is unclear if ABM was used at the site, and if so, if a hazardous waste determination was made. If the ABM contained high levels of metals it is possible that a release of this material contributed to elevated metals concentration in sediment. The amount of ABM used on site, or releases of this material, have not been documented.

did not use

Site Hydrogeology

The site lies in the northern-most Portland Basin, a major north-southeast trending sediment filled structural depression found in the northern part of the Willamette River valley and adjoining Columbia River valley (Swanson et al, 1993). The basin is filled with recent alluvium, Pleistocene cataclysmic flood deposits, Miocene to Holocene nonmarine sedimentary rocks, and is underlain by Eocene to Miocene volcanic and sedimentary rocks that are exposed along the basin margins.

The youngest deposits are recent alluvium (silt, sand and gravel mixtures) characteristic of an active fluvial environment. These are made up of shoreline, river channel, and adjacent floodplain deposits.

Lakeside Industries lies between U.S. Highway 30 (St.Helens Road) and the Willamette River, at the base of the Portland Hills. The facility was constructed on varying thicknesses of fill comprised of fine to medium sands and silts overlying alluvial floodplain deposits. Aquifers in the fill and floodplain deposits generally are unconfined and localized due to heterogeneity of the deposits. Occurring at various depths in the site vicinity, Columbia River Basalts (CRB) underlie these alluvial deposits. Deep wells installed in fractured CRB can be very productive and important supply wells. Site elevation is about 30 feet above mean sea level.

Investigations conducted at the Gunderson Inc. site, located east (upstream) of the site, indicate that groundwater flow in the site area is influenced by a northwest trending trough filled with coarse gravel. Basalt occurs at relatively shallow depths of about 50 feet bgs on either side of the trough. Groundwater flow is to the northwest, with local variations near the edge of the trough. Groundwater elevations at the site coincide with the level of the

Willamette River; depth to groundwater varies based on local relief above the river level.

Pathway Summary

Lakeside Industries lies in an industrialized area comprised largely of shipping/transportation, raw materials processing, and bulk chemical handling facilities. No residential-zoned properties are located within a quarter mile of the site (EPA, 1999).

The site is fenced on the three sides. The fourth side that faces the river is not fenced. Because the majority of the site appears paved, the risk of exposure to potentially contaminated surface soil appears minimal. Inhalation of fine asphaltic material or (ABM) present in either smoke or residual dust may pose a risk to site workers, and potentially, downwind receptors including the Willamette River. Utility trench workers could potentially be exposed to subsurface contaminants through direct contact, inhalation, or incidental ingestion.

did not use

The Oregon Water Resources Department records indicate there are no known domestic wells within 1 mile of the site. Numerous monitoring wells have been installed in the vicinity of the site. The closest industrial use well is located less than one-quarter mile from the site. Lakeside Industries maintains a surface water right in the Willamette River adjacent to the site. No place of use was identified in the summary report, indicating the water right is not currently utilized.

being used

The nearest wetland is located approximately 0.1 mile northwest of the site, and is listed at a total area of 0.5 acres (EPA, 1999).

Both recreational and subsistence fishing occur within the Lower Willamette River. Commercial fishing within the Portland Harbor is limited to a small Pacific lamprey fishery. Recreational boating, water skiing, swimming, and beach use also occur within the Harbor.

The Lower Willamette River provides habitat for 39 fish species, including populations of wild cutthroat trout, rainbow trout, and mountain whitefish. White sturgeon are plentiful within the Harbor. The Harbor is also an important migratory corridor, nursery habitat, and adult foraging area for two runs of Chinook salmon, two runs of steelhead trout, and individual runs of coho and sockeye salmon.

Upper Willamette River populations of chinook and steelhead, which migrate through the Harbor, are listed as threatened species under the Federal Endangered Species Act. The Pacific lamprey is considered a federal species of concern.

Great blue herons, cormorants, osprey, mergansers, kingfishers, peregrine falcons, and bald eagles routinely forage within the Harbor. The area is also part of the wintering range for the Aleutian Canada goose. All are protected under the Migratory Bird Treaty Act. The peregrine falcon is federally listed as an endangered species, while the Aleutian Canada goose is federally listed as threatened species. The bald eagle also is a threatened species, but was recently proposed to be removed from this list.

There is little data on the nature and extent of the benthic community within Portland Harbor sediments. However, it is known that contamination in the benthos, which is a protected beneficial use, can be the source of food-chain effects that radiate up to the species listed above, including humans.

The Lower Willamette River is water quality limited for the following toxic compounds:

- Dioxins/furans (water column and sediments);
- Mercury (fish tissue);
- Pesticides (water column and sediments);
- Polynuclear Aromatic Hydrocarbons - PAHs - (water column and sediments); and
- Trace metals (water column and sediments).

DEQ's Water Quality Division is developing Total Maximum Daily Load requirements (TMDLs) within the lower Willamette River for these contaminants. A TMDL for 2,3,7,8-TCDD was established in 1991.

Conclusions/Recommendations

NOTE: As indicated previously, this review is limited to establishing a link between site activities and contamination in adjacent Portland Harbor sediments. It does not necessarily represent a thorough review of available site data, and the conclusions and recommendations presented below may reflect this limited focus.

Based on a review of the available information summarized in this strategy recommendation, DEQ has concluded that:

- Elevated concentrations of a number of metals, and one SVOC were detected in sediment located near the downstream edge of the site (SD135). However, the surface sediment sample collected near the Lakeside Industries dock, with the exception on antimony, does not contain metals elevated above baseline levels. Therefore, historical use of the site as a steelyard, and use of ABM at the site, does not appear to have impacted sediment quality at the site.

not factual!

- Elevated concentrations of LPAHs and/or HPAHs were not detected in the sediment adjacent to the site. This suggests that although there was long term use and a high volume of RAP handled at the site dock, and emissions from the asphalt burner, the site is not a significant contributor to PAH contamination in sediments.

- Metals staged on site upland areas may have resulted in a discharge to the dry well during runoff events, and potentially to the Willamette River. The fate of potential contaminants in the dry well, and the relationship to the City storm water outfall is not known.

A Preliminary Assessment (PA) should be conducted to evaluate potential upland contaminant sources such as the dry well, and past waste management practices. As necessary, the PA should present recommendations aimed at preventing potential further contamination of adjacent sediment. DEQ has determined that these actions warrant a medium priority for follow-up.

There is insufficient information to propose adding the site to DEQ's Confirmed Release List or Inventory at this time.

References

DEQ consulted the following general references in preparing this Strategy Recommendation:

1. Portland Harbor Sediment Investigation Report, prepared by Roy F. Weston, Inc. for USEPA, May 1998.

2. Lakeside Industries response to DEQ Site Assessment Information Request, April 20, 1999.

3. DEQ LUST Database.

4. DEQ HWIMSy Hazardous Waste Generator Database.

5. DEQ SPINS Spill Database.

6. MetroScan Property Records, Multnomah County, Oregon.

7. EPA SITEINFO Mapping Application, available at website: http://www.epa.gov/r10earth/r10gis/r10site.html

Attachments

Table 1: River Sediment Contaminant Concentrations (1997)

Figure 1: Site Location Map

Figure 2: Site Property Boundary Map

Figure 3: Sediment Sampling Points, 1997 Portland Harbor Sediment Investigation

Figure 4: Site Features

TABLE 1

River Sediment Contaminant Concentrations (1997)

Lakeside Industries

		Downstream	Lakeside Industries			Upstream	Apparent Portland Harbor Sediment Baseline
Contaminant	Units	SD131	SD135	SD135A	SD137	SD140	Maximum Value
Aluminum	ppm	36600	33000	40900	38400	41000	42800
Antimony	ppm	5	<5	<5	6	<5	<5
Arsenic	ppm	<5	<5	<5	<5	<5	<5
Barium	ppm	170	157	197	181	186	195
Beryllium	ppm	0.55	0.53	0.56	0.6	0.6	0.7
Cadmium	ppm	0.5	0.4	0.7	0.5	0.6	0.6
Chromium	ppm	34.7	31.6	38.7	37.8	37.6	41
Cobalt	ppm	17.4	15.8	18.9	18.2	19	19.7
Copper	ppm	39.8	37.3	55.7	42.2	44	60
Iron	ppm	38700	35700	41400	41400	43400	45000
Lead	ppm	20	16	32	17	15	30
Manganese	ppm	542	505	658	573	694	810
Mercury	ppm	0.06	0.05	0.2	0.07	0.08	0.1
Nickel	ppm	28	26	30.2	29	30	32
Selenium	ppm	10	9	6	15	10	1S
Silver	ppm	0.7	0.9	1.5	0.8	0.7	1.4
Thallium	ppm	9	10	6	15	11	13
Titanium	ppm	NA	NA	NA	1960	NA	2075
Vanadium	ppm	94.2	87.5	108	102	106	112
Zinc	ppm	126	103	181	103	102	118
2-Methylnaphthalene	ppb	<20	<20	54	<20	<20	150
4-Methylphenol	ppb	360	340	290	590	730	680
Benzoic Acid	ppb	<200	<200	380	<200	<200	<200
Benzyl Alcohol	ppb	<20	<20	<20	<20	<20	<20
bis(2-Ethylhexyl)phthalate	ppb	210	320	270	250	190	390
Butylbenzylphthalate	ppb	<20	<20	<20	<20	<20	<20
Carbazole	ppb	<20	<20	<20	<20	<20	100
Di-N-Butylphthalate	ppb	<20	<20	<20	<20	<20	<20
Di-N-Octylphthalate	ppb	<20	<20	<20	<20	<20	<20
Dibenzofuran	ppb	<20	<20	<20	<20	<20	10D
Dimethylphthalate	ppb	<20	<20	<20	<20	<20	<20
Pentachlorophenol	ppb	<100	<100	<100	<99	<99	Detect
Phenol	ppb	<20	<20	<20	<20	<20	<20
LPAHs (total)	ppb	59	71	368	67	62	700
HPAHs (total)	ppb	406	438	894	462	524	2400
DDTs (total)	ppb	NA	NA	NA	4.5	NA	220
PCBs (total)	ppb	NA	NA	NA	<40	NA	<180
Organotins (total)	ppb	NA	NA	NA	<5.25	NA	300
2,4-D	ppb	NA	NA	NA	NA	NA	<3.3
2,4-DB	ppb	NA	NA	NA	NA	NA	<S
TOC	%	1.1	1	1.7	1.3	1.6	2
Water Depth	Ft	10	16	20	10	18	
Sediment Sample Depth	cm	0-13	0-15	0-85	0-16	0-17	

Noles:

100 = Value exceeds Portland Harbor Baseline Value

100 = Value is Greater than 2X Portland Harbor Baseline Value

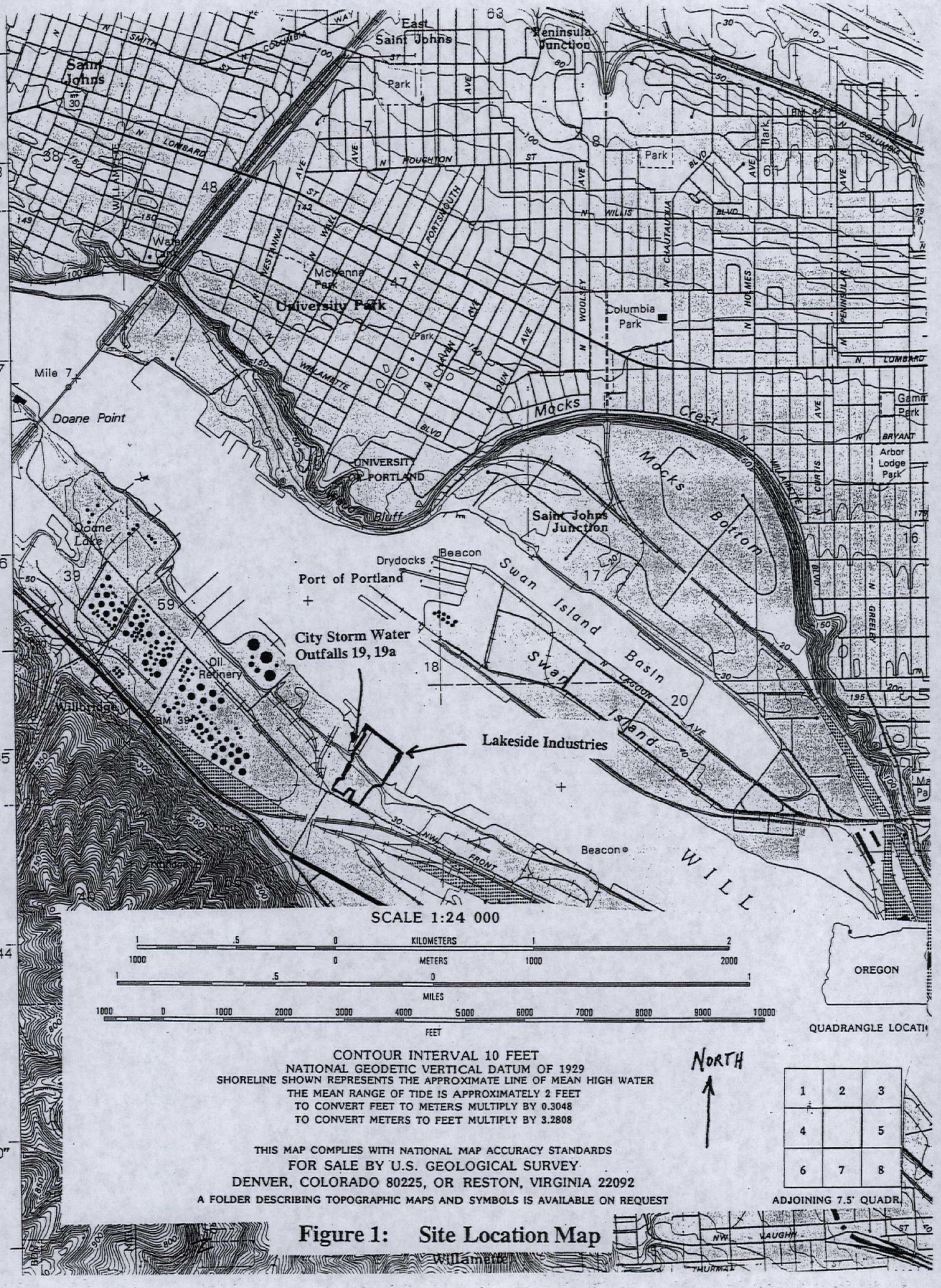

Figure 1: Site Location Map

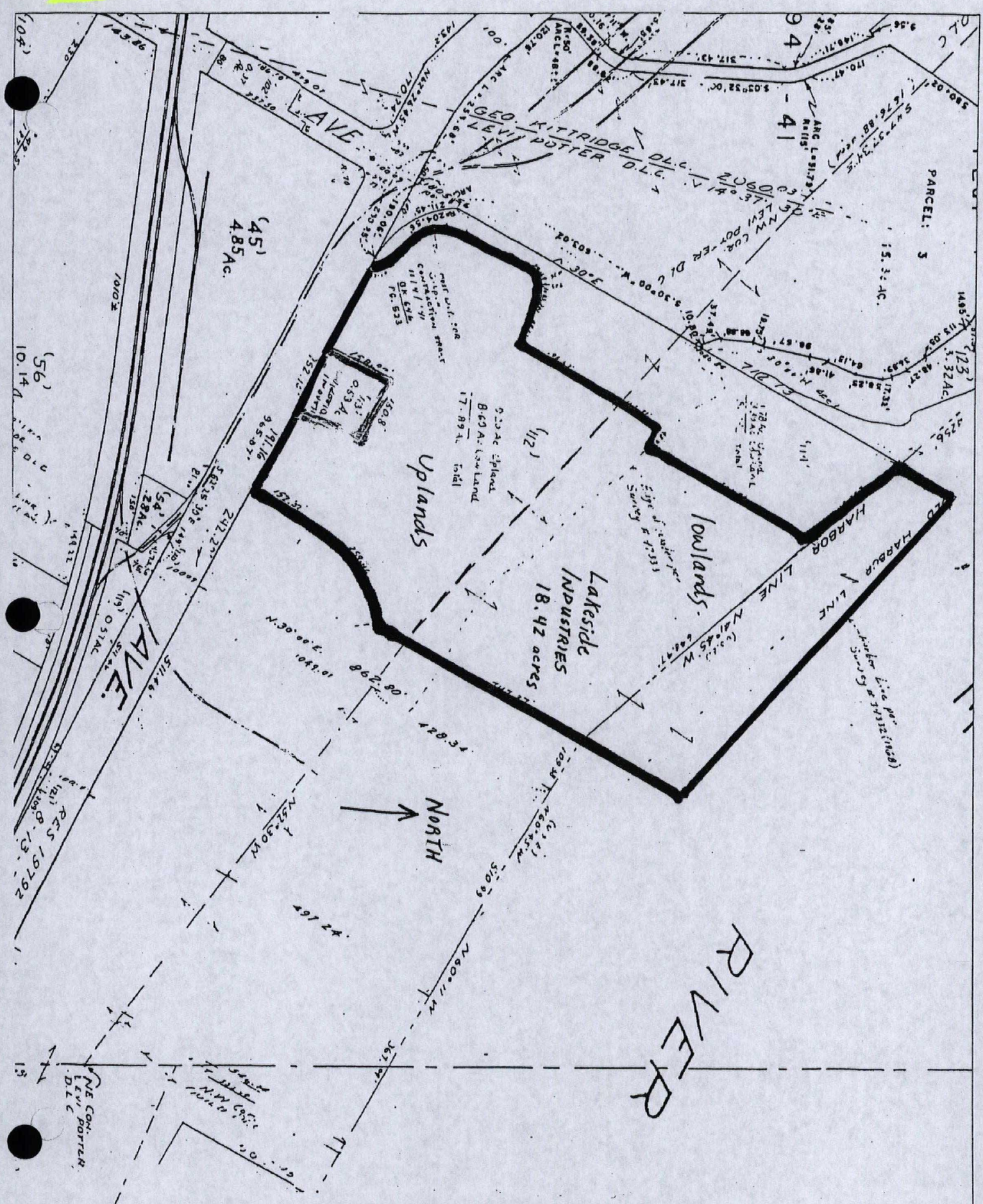

Figure 2: Site Property Boundary Map

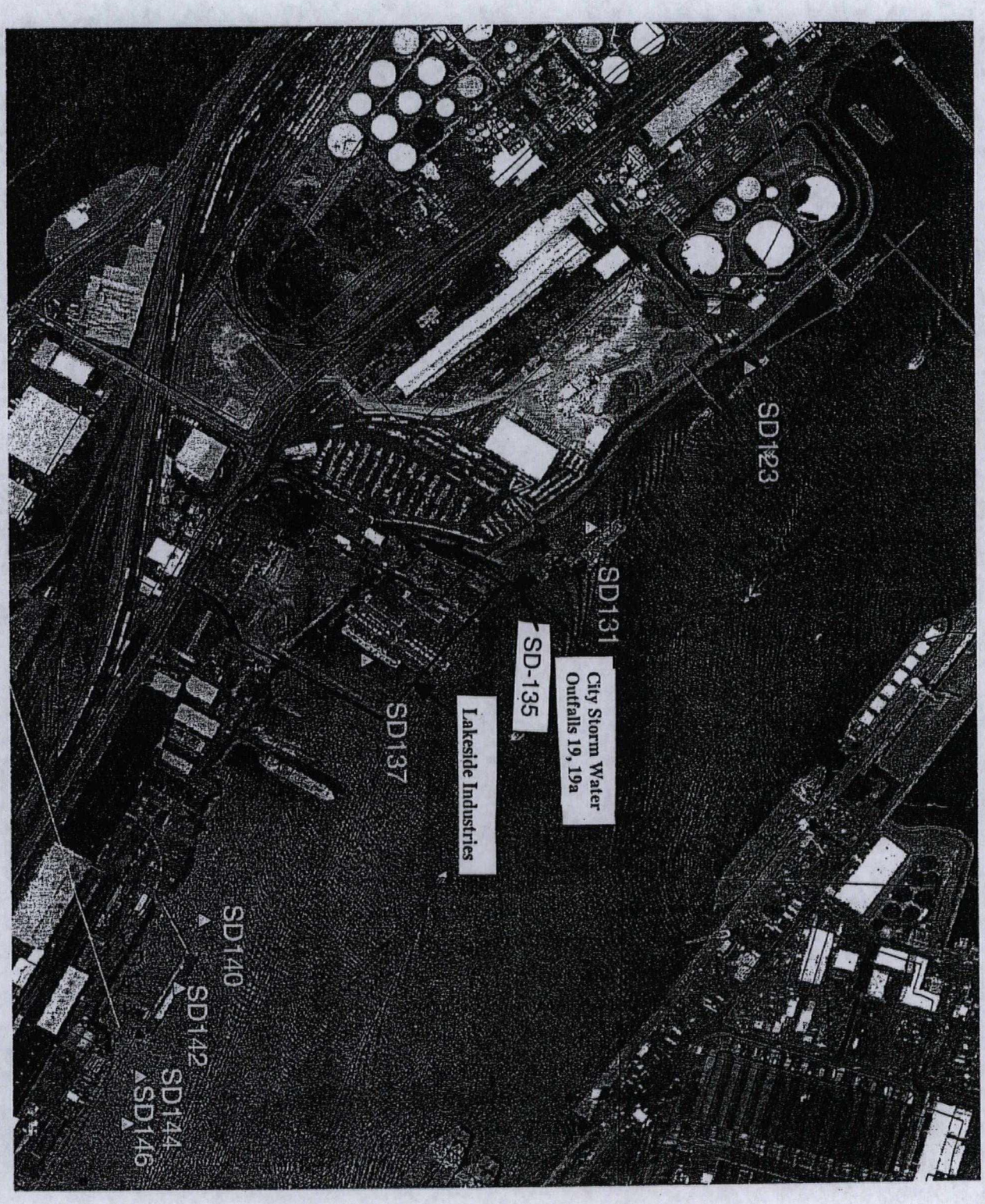

Figure 3: Sediment Sampling Stations (EPA, 1997)

Explanation:

▲surface sediment sample stations

●surface sediment and sediment core locations

→ NORTH

0 0.1 0.2 Miles

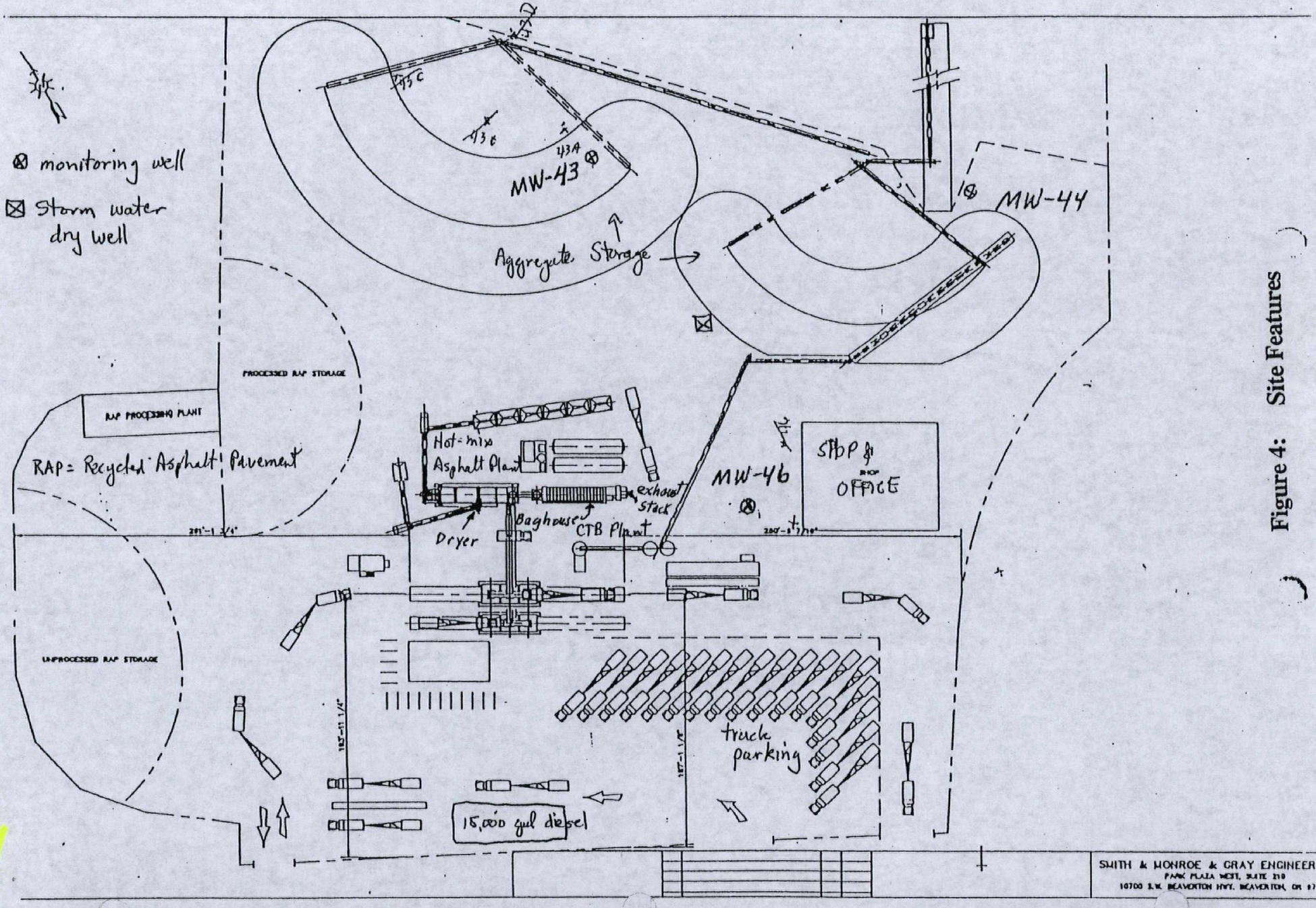

Figure 4: Site Features